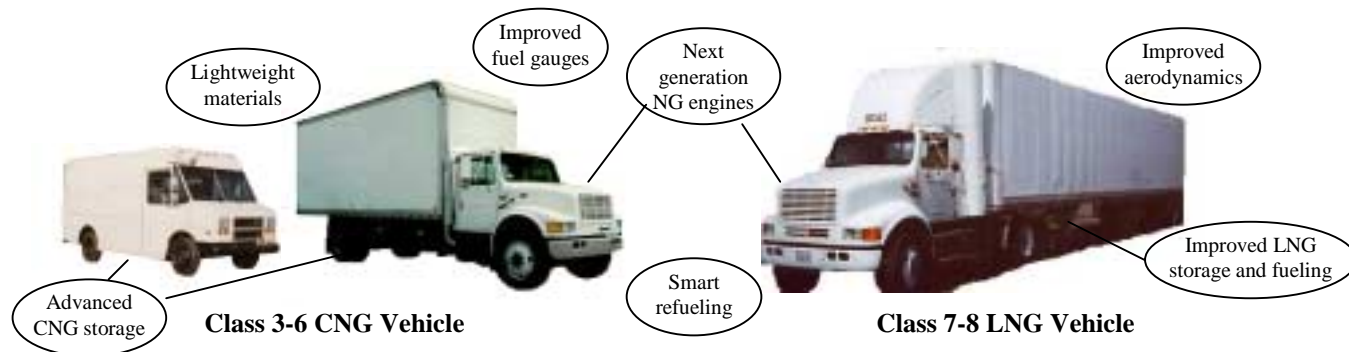


# Welcome to the first meeting of the NGNGV Program's Vehicle Working Group





# Meeting Objectives

- Kickoff the Vehicle Working Group
- Give participants a clear understanding of the NGNGV Program
- Provide an overview of existing applicable DOE, GRI, SCAQMD, and CEC research
- Get your input on the technologies and vehicles that should be developed in the program:
  - Vehicle vocations and markets
  - Natural gas engine technologies
  - Vehicle fuel system and storage technologies
  - Body and chassis technologies



# Meeting Agenda

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## Day 1- Tuesday

Presentation of technologies by the funding organizations

## Day 2 - Wednesday

Input from YOU

# Program Outline







## **Vision and Goals for the Future**

**One medium-duty (Class 3-6) CNG vehicle and  
one heavy-duty (Class 7-8) LNG vehicle  
will be available in 2004 that:**

- ✱ Implement advanced DOE natural gas and heavy-vehicle technologies
- ✱ Implement high efficiency engine technology
- ✱ Implement step change in technology over current NG vehicles
- ✱ Have exhaust emission levels below proposed emission standards for 2007
- ✱ Are fully competitive with diesel vehicle counterparts in terms of performance and life-cycle economics
- ✱ Are commercially viable



## Vision and Goals for the Future

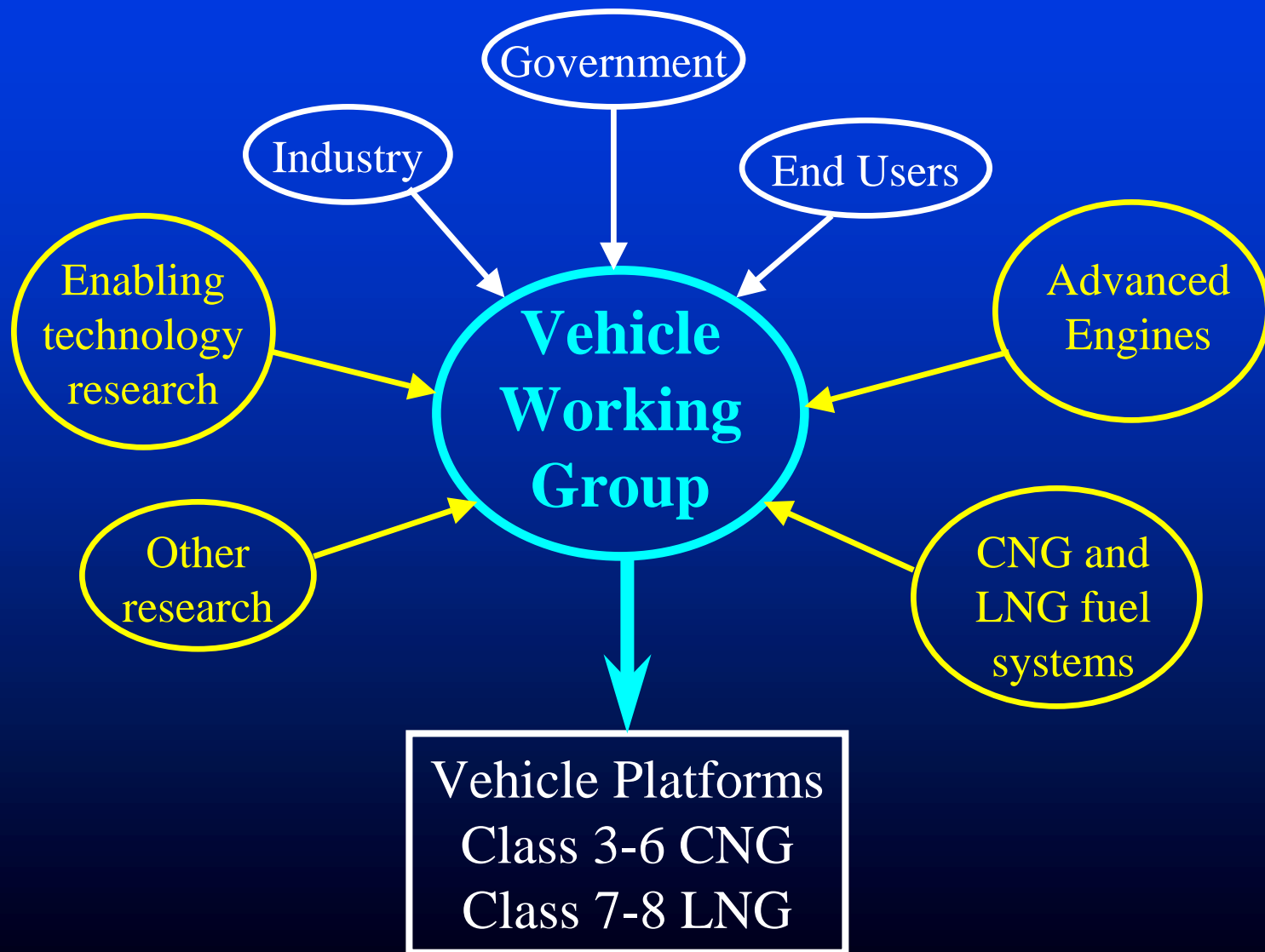
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- ✱ Are fully competitive with diesel vehicle counterparts in terms of performance and life-cycle economics
- ✱ **Are commercially viable**


# Finding the Balance....



# Program Integration

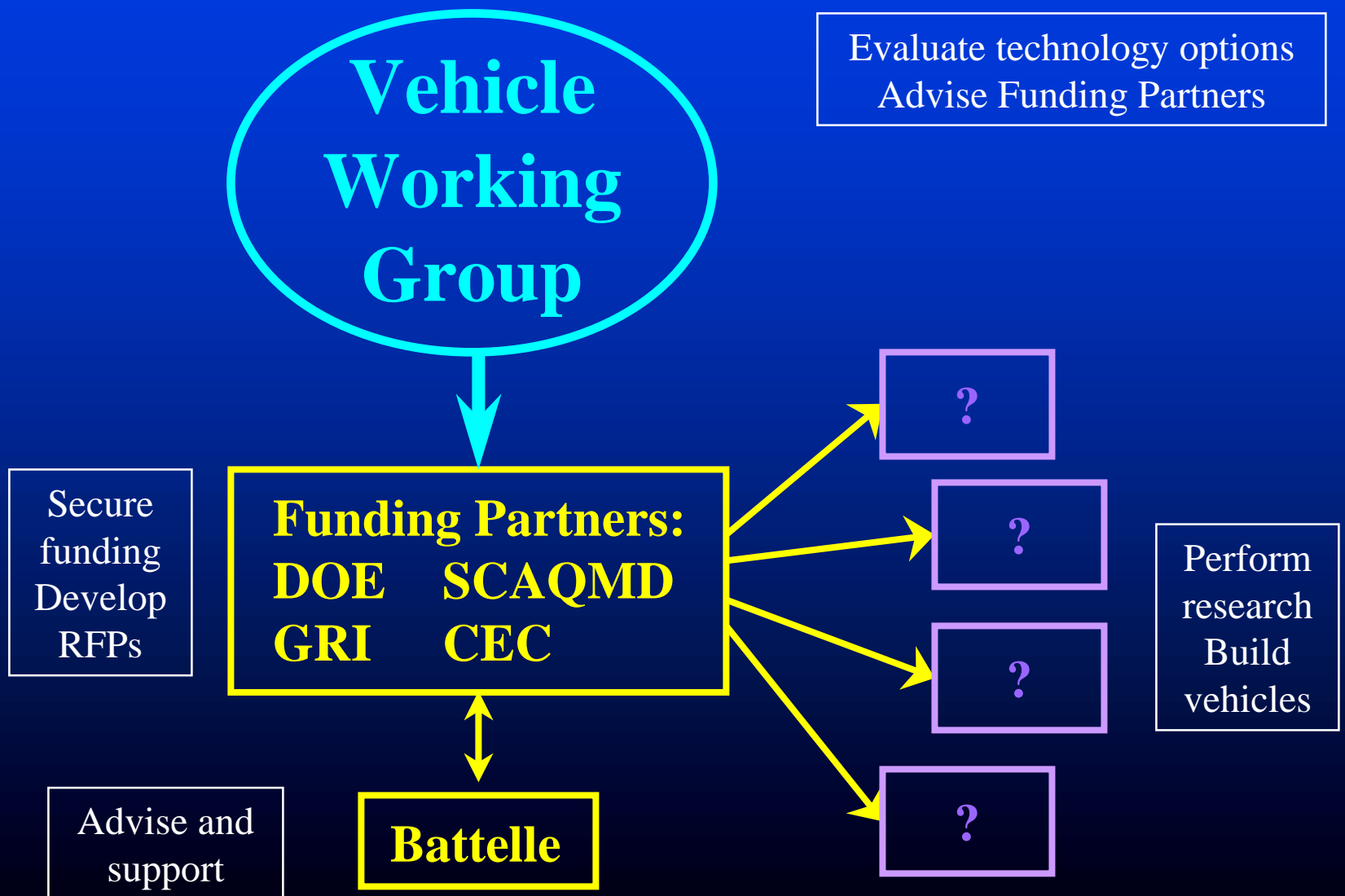






**This Vehicle Working Group  
is the advisory body of the  
NGNGV Program!**

# NGNGV Program Structure





## Two Round of Research

Round 1  
FY2001  
Enabling  
Technology

### Round 1

technology R&D that...

- is close to completion
- could be completed with a relatively short, focused research effort
- could be made commercially viable in the 2004 time frame
- overcomes current barriers to natural gas vehicle introduction

## Two Round of Research

### Round 2

Development of two prototype vehicles to be put in service on on-road development in 2004.

- Class 3-6 CNG Vehicle
- Class 7-8 LNG Vehicle

Round 2  
2002  
Prototype  
Vehicles



## Two Round of Research

Round 1  
FY2001  
Enabling  
Technologies

Round 2  
FY2002  
Prototype  
Vehicles



# Two Round of Research

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# Program Timeline

2000

2001

2002

2003

2004

## Prototype Vehicle Design, Development and Evaluation

Establish Vehicle Working Group

Develop design strategy and identify remaining technology obstacles

Define duty cycle and performance specifications

Complete R&D to overcome remaining obstacles

Competitive solicitation for vehicle development

Design and develop prototype vehicles

Baseline Performance Testing

Emissions Testing

Accelerated Reliability Testing

Deployment

# Proposed Program Timeline

FY2000	FY2001	FY2002	FY2003	FY2004
<b>Creating Market Interest and OEM Support</b>				
Stakeholder workshops				
Ongoing industry communications				
Identify first-tier markets and vehicle needs				
Define vehicle applications				
		Solicit pre-production sales		
			Early announcements	
				Rollout

## Prototype Vehicle Design, Development and Evaluation

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Baseline Performance Testing				
Emissions Testing				
Accelerated Reliability Testing				
Deployment				

## Fueling and Maintenance Infrastructure and Field Support

Evaluate existing infrastructure in first and second tier markets				
Determine vehicle infrastructure requirements				
Develop infrastructure support strategy				
Coordinate infrastructure development				
Train infrastructure staff				



THE key feature of these trucks must be...

*Commercial Viability*



# Creating Market Interest and OEM Support

Pick the right vehicles to develop with input from

- The Vehicle Working Group
- Clean Cities stakeholders
- Key fleet operators

Identify the best “first tier markets” to introduce the new vehicles

Open dialog with key potential customers and maintain the dialog throughout the program.

- Understand and identify their needs for heavy-duty NGVs
- Build market interest and support
- Encourage incorporation of the vehicles into plans for attaining air quality objectives



# Proposed Program Timeline

FY2000	FY2001	FY2002	FY2003	FY2004
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FY2000	FY2001	FY2002	FY2003	FY2004
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# Fueling and Maintenance Infrastructure and Field Support

Experience has shown that successful deployment and subsequent market growth requires

- Stable and reliable fueling infrastructure
- highly responsive maintenance and field support programs

For first vehicles we will coordinate enhancements of fueling and maintenance infrastructure including

- Evaluating existing infrastructure and determining needs
- Developing an infrastructure support strategy
- Coordinating enhancement activities
- Training the infrastructure and support personnel

# Proposed Program Timeline

FY2000	FY2001	FY2002	FY2003	FY2004
<b>Creating Market Interest and OEM Support</b>				
Stakeholder workshops				
Ongoing industry communications				
Identify first-tier markets and vehicle needs				
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				Rollout

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Establish Vehicle Working Group				
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# Proposed Program Timeline

FY2000	FY2001	FY2002	FY2003	FY2004
Creating Market Interest and OFM Support				
Stakeholder workshops				
Conducting industry communications				
Identify first tier markets and vehicle needs				
Define vehicle applications				
		Solicit pre-production sales		
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Prototype Vehicle Design, Development and Evaluation				
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## Fueling and Maintenance Infrastructure and Field Support

Evaluate existing infrastructure in first and second tier markets

Determine vehicle infrastructure requirements

Develop infrastructure support strategy

Coordinate infrastructure development

Train infrastructure staff



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## Anticipated NGNGV FY 2001 Program Budget

Organization	Anticipated FY 2001 Funding
DOE	\$4,000,000
GRI	\$350,000
SCAQMD	up to \$850,000
CEC	\$300,000 to \$500,000
Industry Cost Share	50/50 match
<b>Approximate Total</b>	<b>\$9 to \$11million</b>



## Upcoming NGNGV Events...

- Presentation and information gathering at the National Clean Cities Conference:  
May 8-10, 2000  
San Diego, CA
- Second VWG meeting:  
Planned for September, 2000  
Probably in Dallas, TX

# The NGNGV Program





# Meeting Agenda

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## Tuesday

Presentation of technologies by the funding organizations

## Wednesday

Input from YOU





# Day 1

## Objective

To review current research that may be applicable to the vehicles that will be developed in the NGNGV Program

## Your mission for Day 1

- Understand the technologies presented
- Flag technologies that you think we should incorporate into the prototype vehicles

## Your tools

- Your brain
- Questions
- Comments
- Sticky notes



## Day 2

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### Objective

To get your input on the best market and technologies for the prototype vehicles

### Your mission for Day 2

- Make your opinion known!

### Your tools

- Your brain
- Structured breakout sessions designed to get input from EVERYONE



# Meeting Agenda - Day 1

## Tuesday, May 2, 2000

1:00-1:10	Welcome and Introductions	Steve Goguen, DOE OTT
1:10-1:30	Purpose of the Meeting Review of the Agenda	Paul Norton, NREL
1:30-2:00	Overview of the NG-NGV Program Goals for the Vehicles Meeting Objectives	Paul Norton, NREL
2:00-3:15	DOE Vehicle Technologies Jim Wegrzyn, Brookhaven National Laboratory Dave O’Kain, Oak Ridge National Laboratory Bruce Wilding, Idaho National Engineering and Environment Lab Mike Frailey, National Renewable Energy Laboratory	Kevin Stork, ANL/DOE
3:15-3:30	Break	
3:30-3:50	Natural Gas Industry Sponsored Vehicle Technologies	GRI
3:50- 4:10	South Coast Air Quality Management District Technologies	SCAQMD
4:10-4:30	California Energy Commission Technologies	CEC
4:30-5:00	Review and Plans for the Next Day	Paul Norton, NREL
6:30-9:00	<b>Reception Hosted by GRI and Dinner Hosted by NREL</b>	